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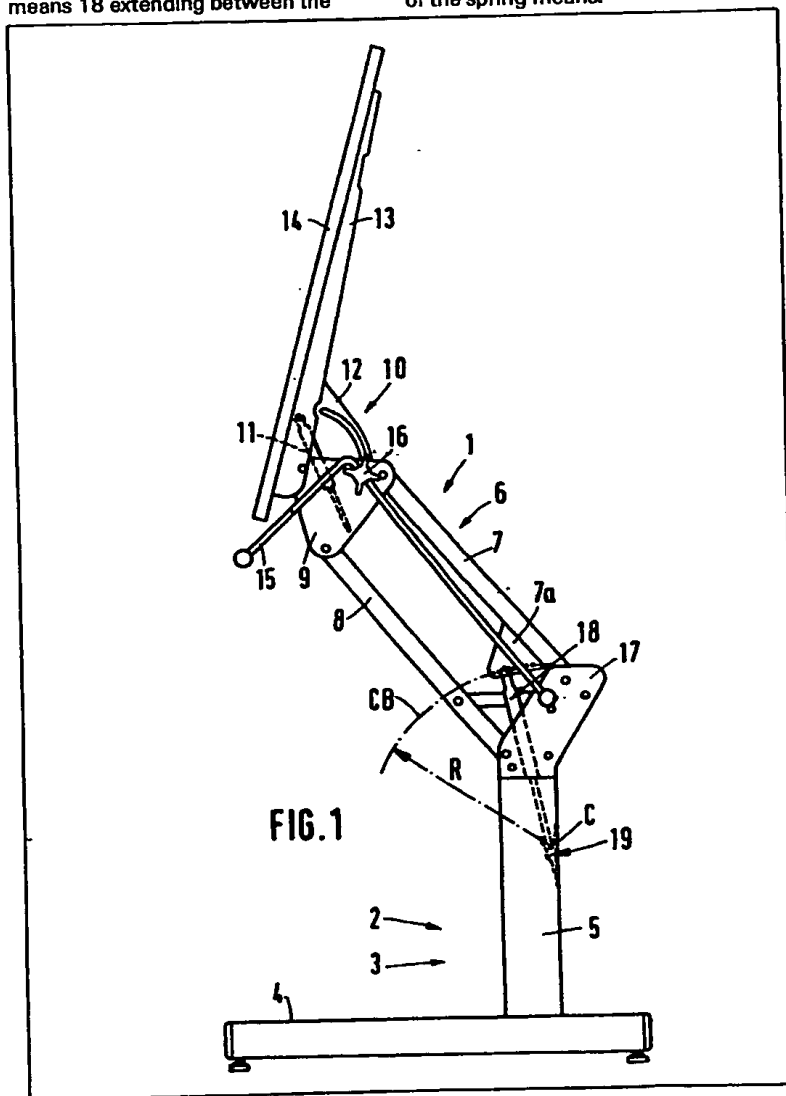
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- (71) Applicant
AB Spacio System
(Sweden),
Norbergsgatan 26,
S-214 50 Malmo,
Sweden
- (72) Inventor
Hans Bertil Nilsson
- (74) Agent and/or Address for
Service
Stevens Hewlett and
Perkins,
5 Quality Court, Chancery
Lane, London WC2A 1HZ

(54) Counter balanced work tables

(57) A balancing device for work tables, preferably drawing tables, comprises a stand 2, one or more lever arms 7, 8 pivotally mounted on the stand, a work-table top 14 mounted on the lever arm or arms and one or more balancing means for balancing items, including the work-table top, mounted on the stand via the lever arm or arms. The balancing means comprises a telescopic spring means 18 extending between the

stand and the lever arm or arms.

In order to reduce the risk of misadjustment of the spring means and at the same time quickly and easily carry out the mounting and adjustment operations necessary, each spring means 18 is pivotally journaled at its bottom end 19 on the stand 2 and at its top end on the lever arm 7, 8 in one of a number of positions provided along an arcuate line CB, the centre C of which coincides with the lower support point of the spring means.



GB 2 112 279 A

SPECIFICATION

Improvements relating to work tables

The present invention relates to a balancing device for work tables, particularly drawing tables, of the type comprising a stand, one or more lever arms pivotally mounted on the stand, a work-table top arranged on the lever arm or arms and one or more balancing means for balancing members, including the work-table top, mounted on the stand via the lever arm or arms, said balancing means comprising telescopically functioning spring means extending between the stand and the lever arm or arms.

It is known in height adjustable work tables, e.g. of the drawing-table type, to use gas springs for balancing the equipment such as the drawing-table top, drawing apparatus and lamp mounted on the table. While the weight of this equipment may vary within wide limits, e.g. 15—60 kg, it is necessary to vary the force by which the gas spring or springs affects the drawing table. In drawing tables in which height adjustment is provided by means of pivotable lever arms, it is known to mount one or more gas springs between the lever arm and the stand of the drawing table. Adaptation to various loads is often very circumstantial, since it is necessary to mount gas springs with different pressure in order to make the adaptation possible.

It is also known to mount the gas spring or springs in various fixed positions along said lever arm such that different moments are obtained from the gas springs. The upper end of the gas spring is then pivotally mounted in one of several holes in said arm and the lower end thereof is mounted in a corresponding hole of an identical series of holes in the stand of the drawing table. Hereby, it is possible to parallelly move the gas spring towards or away from the centre of rotation of the lever arm in the stand and thus attain the desired moment from the gas spring or springs. However, this movement of the gas springs is circumstantial, since the position of the upper as well as the lower mounting of the gas springs must be adjusted. While it is generally necessary to search for the proper position for a satisfactory balancing of the drawing table, the position of the gas springs must be adjusted several times. Since the position of the gas springs in the series of holes present is not controlled, it is easy by mistake, to mount one or more gas springs in the wrong holes in the stand of the drawing table. The person working at the drawing table may perhaps not notice it immediately since correct balancing has been achieved, but the erroneously mounted gas spring limits the vertical movement of the drawing table such that the table does not achieve the intended function. To be able to move the gas springs in said series of holes, they must be carefully arranged parallel to each other, which means difficulties in manufacturing and the parallel movement of the gas springs generally also complicates a suitable building in thereof.

The present invention seeks to reduce or

eliminate said drawbacks and provide in a device of the above type by simple means a suitable arrangement from various aspects, which primarily eliminates or at least to a great extent eliminates the risk for misadjustment of the spring means and at the same time shortens and simplifies the mounting and adjustment operations.

In accordance with the invention there is provided a balancing device for work tables, said device comprising a stand, one or more lever arms pivotally mounted on the stand, a work-table top arranged on the lever arm or arms and one or more balancing means for balancing the items, including the work-table top, mounted on the stand via said lever arm or arms, said balancing means comprising telescopic spring means acting between the stand and the lever arm or arms, the or each spring means being pivotally journaled at its bottom end on the stand and pivotally journaled at its top end on the lever arm in one of a number of positions, provided along an arcuate line on the lever arm, the centre of which coincides with the pivotal support point of the bottom end of the spring means.

In order that the invention may be better understood, an embodiment thereof will now be described by way of example only and with reference to the accompanying drawing in which:—

Figure 1 is a side view of a drawing table incorporating a device according to the invention;

Figure 2 is a side view on a larger scale than Figure 1 of an upper mounting device for a spring means forming part of the device of Figure 1; and

Figure 3 is a section of a lower mounting device for the same spring means, on the same scale as Figure 2.

Figure 1 illustrates a drawing table 1 comprising a stand 2 with two lateral members 3 (only one member is shown since they look the same). The lateral members 3 are connected to each other through a connecting spar (not shown) and each lateral member comprises a foot spar 4 and a tubular stand leg 5 which is open on top. A parallelogram-type linkage 6 is pivotally arranged on top of the stand leg 5 and said linkage includes two lever arms 7 and 8 which are pivotally mounted on said leg 5. These lever arms 7, 8 are pivotally connected to an inclining device 10 having a spring 11 for inclining load and a brake segment 12 which together with said spring 11 is connected to so called mounting rules 13 for a drawing-table top 14. The drawing table 1 also comprises a brake lever 15 for height adjustment and a brake wheel 16 for adjusting the inclination, but these units have no connection with the present invention.

The parallelogram-type linkage 6 is mounted on each lateral member 3 and the support means of the linkage on the stand leg 5 are covered from the outside by lateral plates 17 screwed onto said stand leg 5.

For balancing the drawing-table top 14 and various accessories arranged on said drawing-

table top 14, balancing means are mounted between the stand 2 and the linkage 6. Said means comprise, more specifically, telescopic spring means 18, e.g. of gas spring type, which is
 5 journaled at its bottom end within the stand leg 5 and at its top end on a flange 7a, which latter is mounted on the lever arm 7 adjacent to said stand leg 5.

In order to facilitate the mounting and/or
 10 adjustment of the spring means 18, it is journaled at its bottom end to pivot about at point C. At its top end, the spring means 18 is set at a position L3 of a number of positions L1—L8, provided along an arcuate line CB, the centre of which
 15 coincides with the point C, i.e. the lower support point of the spring means 18.

In the embodiment shown, the positions L1—L8 are defined by holes, the centres of which coincide with the arcuate line CB. As an
 20 alternative to the holes, a longitudinal slit (not shown) may be provided, the centre of which coincides with the arcuate line CB, but such an arrangement may in certain cases create
 25 problems, since retainment of the spring means at a certain point in the slit may require clamping of the joint.

For each mounting of spring means 18, the stand leg 5 is equipped with a bracket 19 which is open in an upwards direction and which permits
 30 downwards insertion of the spring means 18 therein and setting without being locked against extraction in upwards direction but against
 35 sideways sliding. Hereby, the spring means 18 is easily extracted from the stand leg 5, when required, without previous release and a new
 40 spring means 18 may be inserted into the stand leg 5 until it engages the bracket 19 without the need to anchor it at the bottom end.

The bracket 19 has preferably the shape of a
 40 yoke and is vertically adjustable relative to the stand leg 5. This vertical adjustment may be brought about by means of an eccentric knob having a handle 20 arranged outside the stand leg, said handle having an axle neck 21 protruding into
 45 a hole in said stand leg 5. An axle 22 is eccentrically arranged on said neck 21 and carries the bracket 19. This arrangement means that the upper clamping position of the spring means 18 is quickly and easily adjusted. This is achieved by
 50 locking the linkage 6 after setting thereof in an upper position relative to the stand 2, whereafter the handle 20 is rotated to thereby move the bracket 19 downwards. Thereafter, the spring
 55 means 18 may be moved to another upper clamping position. When the spring means 18 has reached a new upper clamping position, the bracket 19 is moved upwards to starting position.

It is apparent from the drawing, that the spring means 18 is for the most part hidden in the
 60 tubular stand leg 5 and protrudes therefrom.

Only one spring means 18 is shown in the drawing, but preferably, one spring means 18 is provided in each stand leg.

The invention is of course not limited to the
 65 embodiment described above and shown in the

drawing, but may vary within the scope of the following claims. Thus, the invention may be used with other types of drawing tables and with a wide variety of work tables for different purposes.

70 Instead of cooperating with the lever arm 7, the spring means 18 may cooperate with the lever arm 8. The lever arm 7 forms a part of a parallelogram system as shown, but this is not necessary while the lever arm 7 may be arranged
 75 in another way. The upper and lower mounting points of the spring means 18 may of course also be provided in another way while maintaining the features essential for the invention. Finally, it may be noted that the definitions stated with regard to
 80 the centre point C, arcuate line CB and positions L1—L8 are desired ideal positions which in practice are difficult to attain. Therefore, said definitions should be interpreted to lie within practicable limits that are reasonable in this
 85 regard.

CLAIMS

1. A balancing device for work tables, said device comprising a stand, one or more lever arms pivotally mounted on the stand, a work-table top
 90 arranged on the lever arm or arms and one or more balancing means for balancing the items, including the work-table top, mounted on the stand via said lever arm or arms, said balancing means comprising telescopic spring means acting
 95 between the stand and the lever arm or arms, the or each spring means being pivotally journaled at its bottom end on the stand and pivotally journaled at its top end on the lever arm in one of a number of positions, provided along an arcuate
 100 line on the lever arm, the centre of which coincides with the pivotal support point of the bottom end of the spring means.

2. A balancing device according to claim 1, wherein each position on the lever arm for the
 105 spring means is obtained by providing a hole, the centre of which coincides with said arcuate line.

3. A balancing device according to claim 1, wherein a plurality of positions for the top end of the spring means on said lever arm is obtained by
 110 providing a longitudinal slit, along which said spring means may be anchored in various positions, the centre of the slit coinciding with the arcuate line.

4. A balancing device according to any one of the preceding claims, wherein the stand is equipped with at least one bracket into which the
 115 spring means is insertable and settable without being locked against extraction in upwards direction but against sideways sliding.

5. A balancing device according to claim 4, wherein the bracket is vertically adjustable on the
 120 stand.

6. A balancing device according to either one of claims 4 or 5, wherein the bracket has the shape
 125 of a yoke.

7. A balancing device according to any one of the preceding claims, wherein said stand takes the form of a tubular leg.

8. A balancing device according to claim 7, wherein the most part of said spring means is positioned within said tubular leg and protrudes therefrom.

5 9. A balancing device according to claim 8, wherein the upper end of said spring means is connected to a lever arm forming part of a

parallelogram system of arms.

10. A balancing device for work tables substantially as hereinbefore described with reference to the accompanying drawing.

11. A work table when fitted with a balancing device as claimed in any one of the preceding claims.